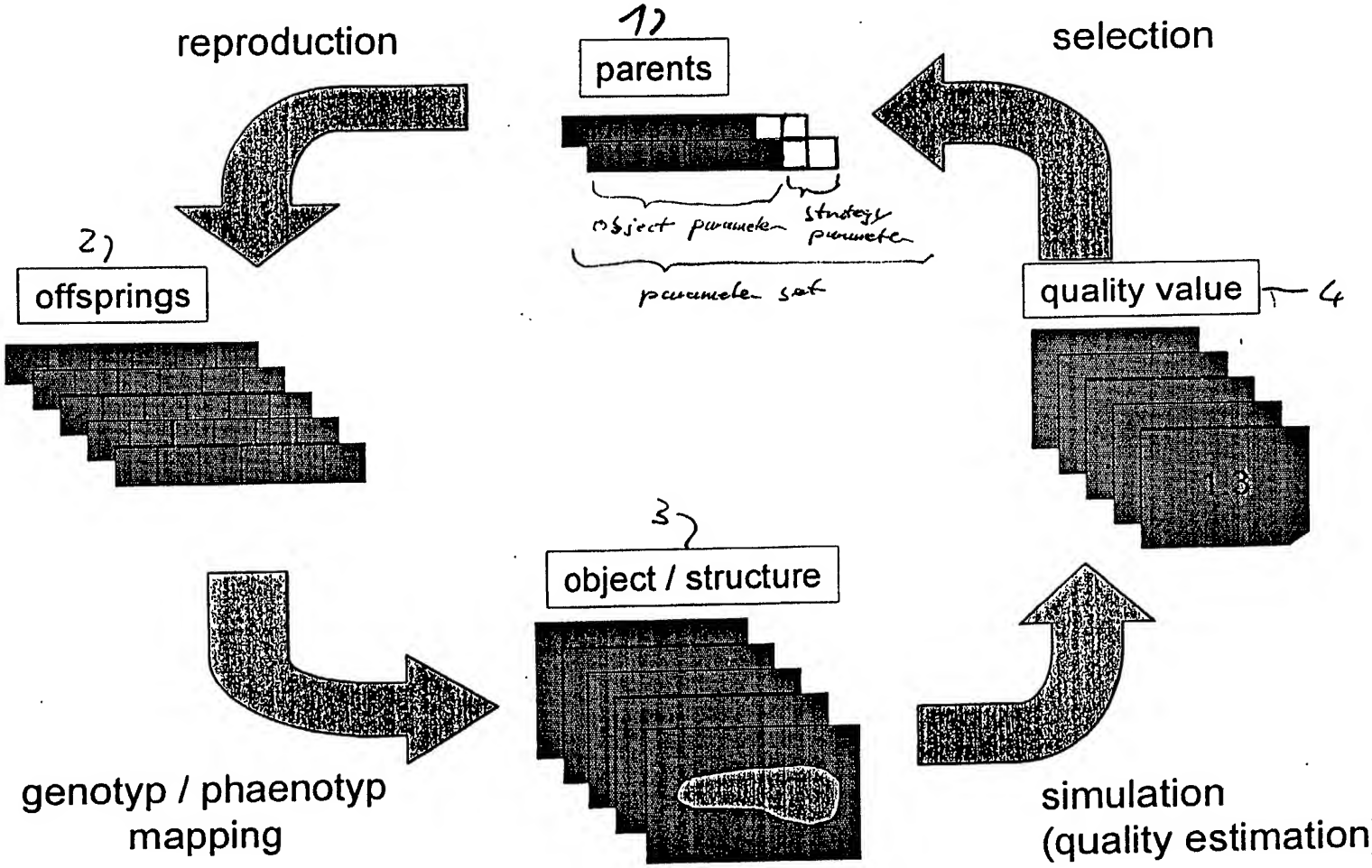

Fig. 1

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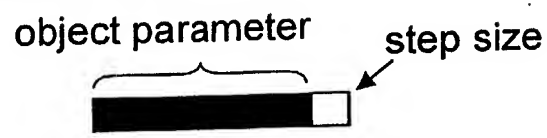
$$\overrightarrow{x^O} = \overrightarrow{x^P} + N(0, \sigma_P^2)$$

Genotype:



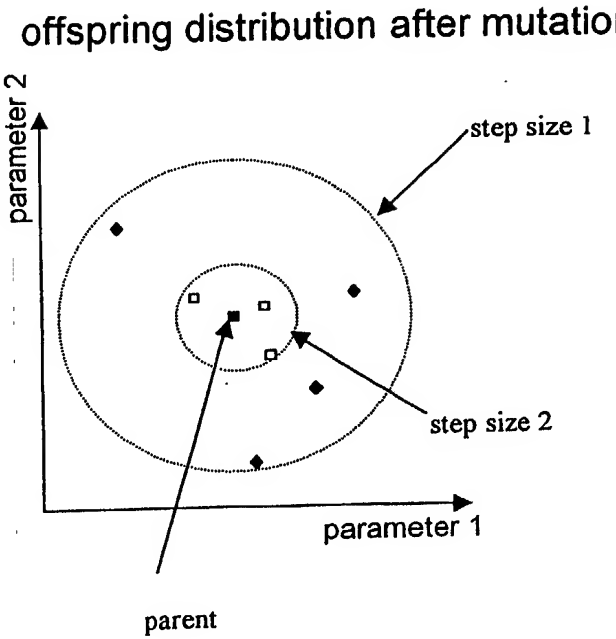
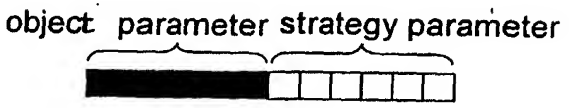
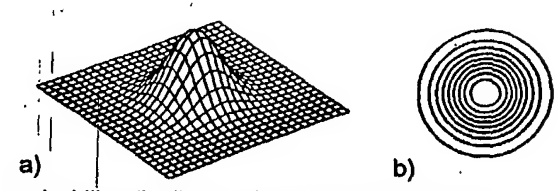


Fig.2

$$x^{\vec{o}} = x^{\vec{p}} + \vec{\delta}$$



$$\vec{\delta} \sim \frac{\sqrt{\det(\Sigma^{-1})}}{(2\pi)^{n/2}} \exp\left(-\frac{1}{2}(\vec{x}-\vec{\mu})^T\Sigma^{-1}(\vec{x}-\vec{\mu})\right)$$



probability distribution for placing an offspring
a) 3D plot b) contour plot

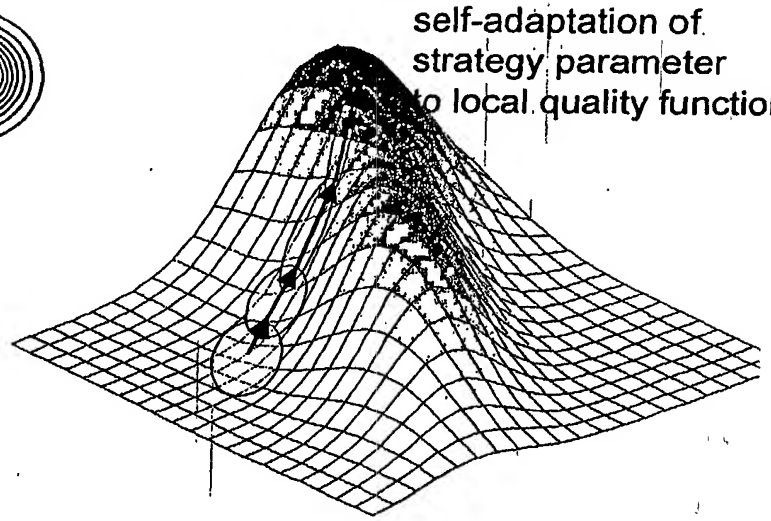


Fig.3

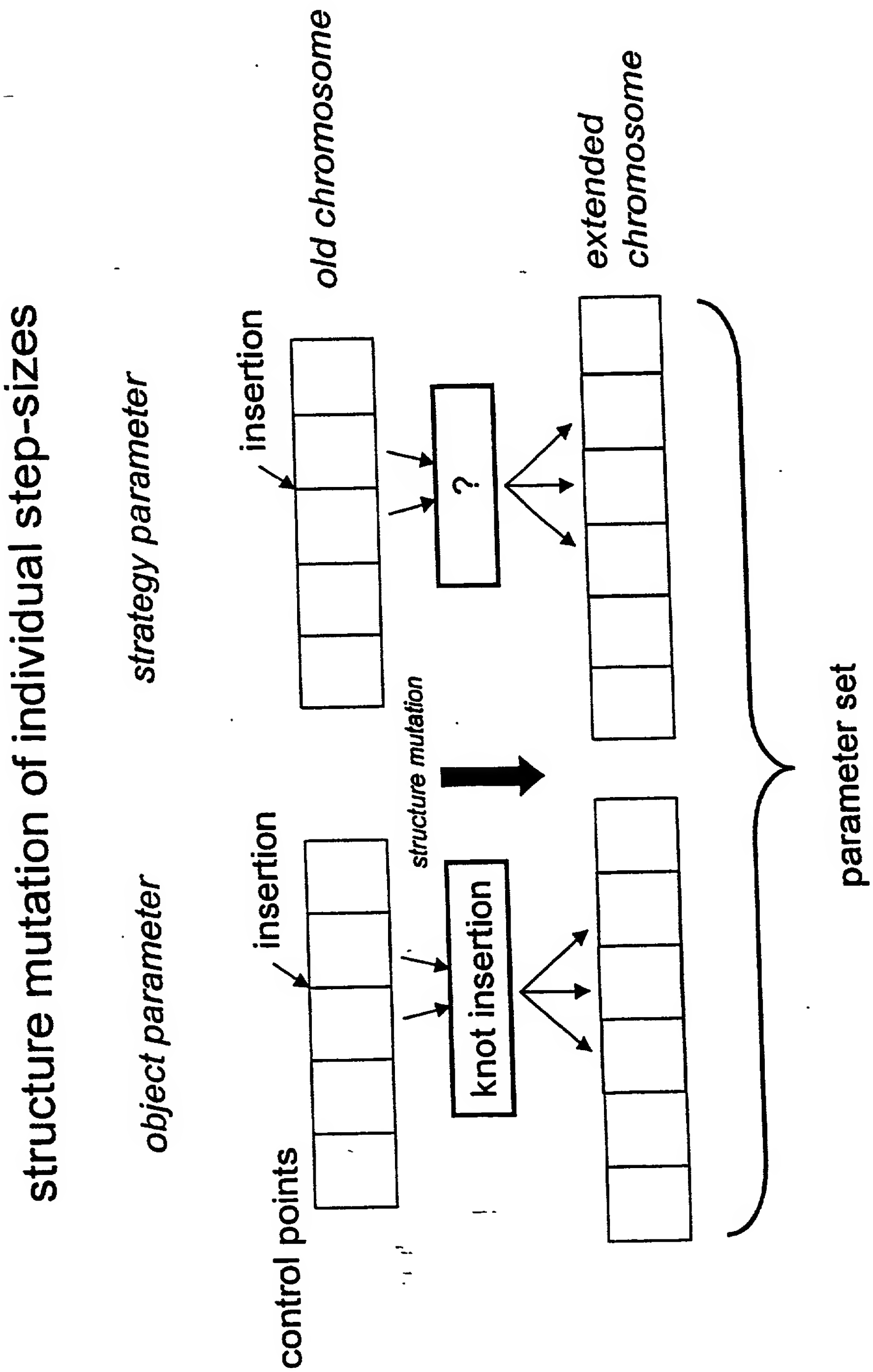

structure mutation of individual step-sizes
object parameter
strategy parameter
control points
insertion
insertion
old chromosome
knot insertion
?
structure mutation
extended chromosome
parameter set

Fig.4

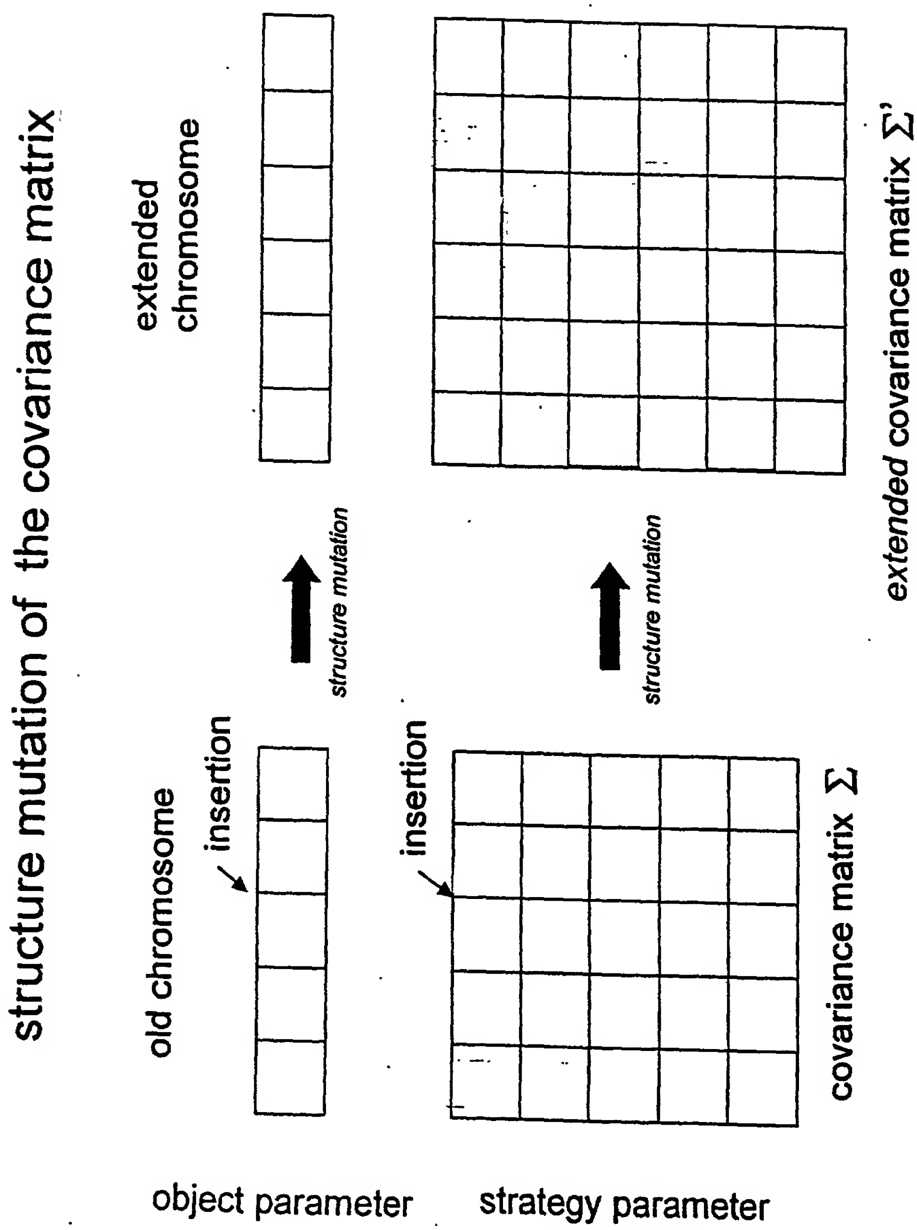

structure mutation of the covariance matrix
old chromosome
insertion
extended chromosome
structure mutation
insertion
structure mutation
covariance matrix Σ
extended covariance matrix Σ'
object parameter
strategy parameter

Fig.5

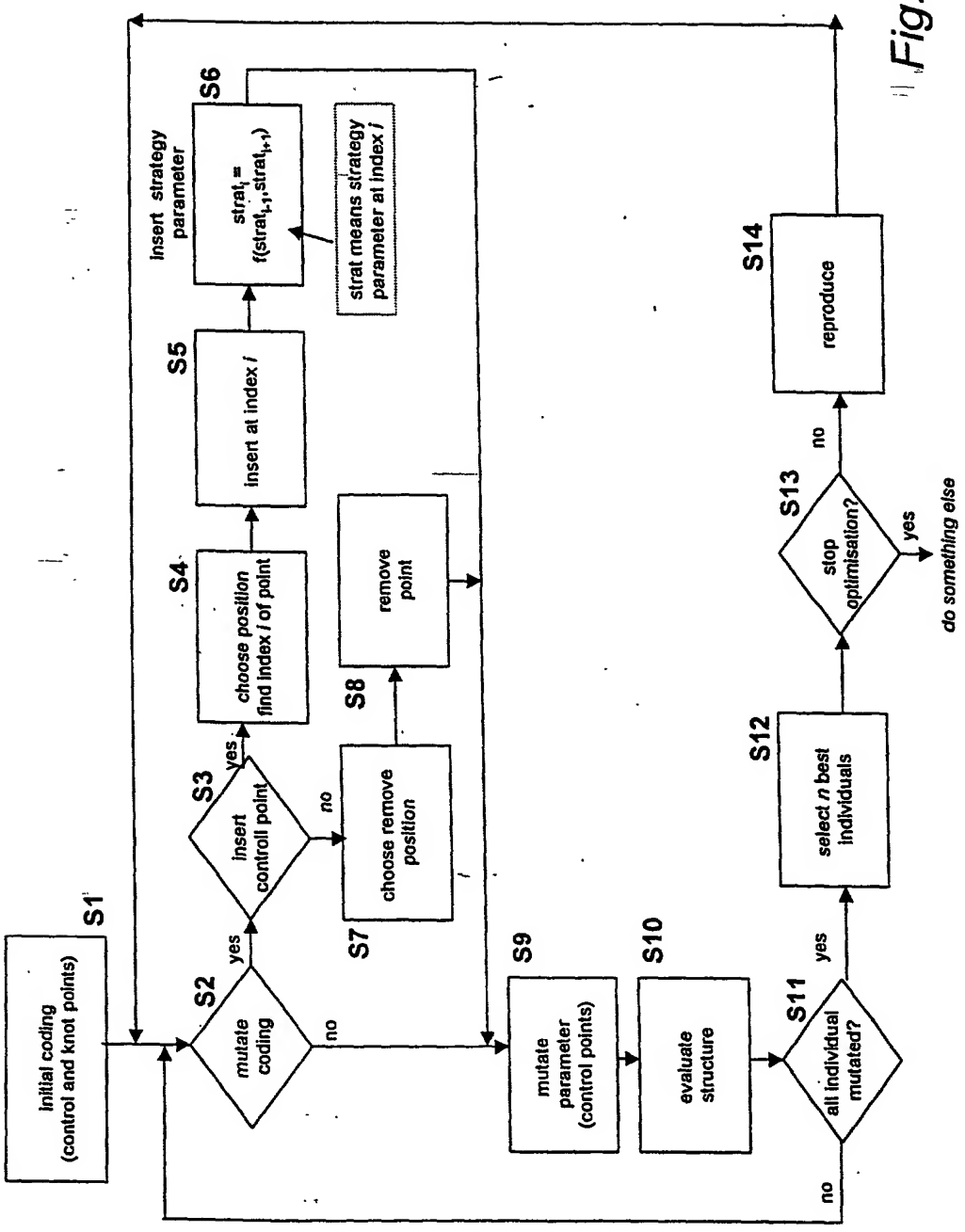


Fig.6

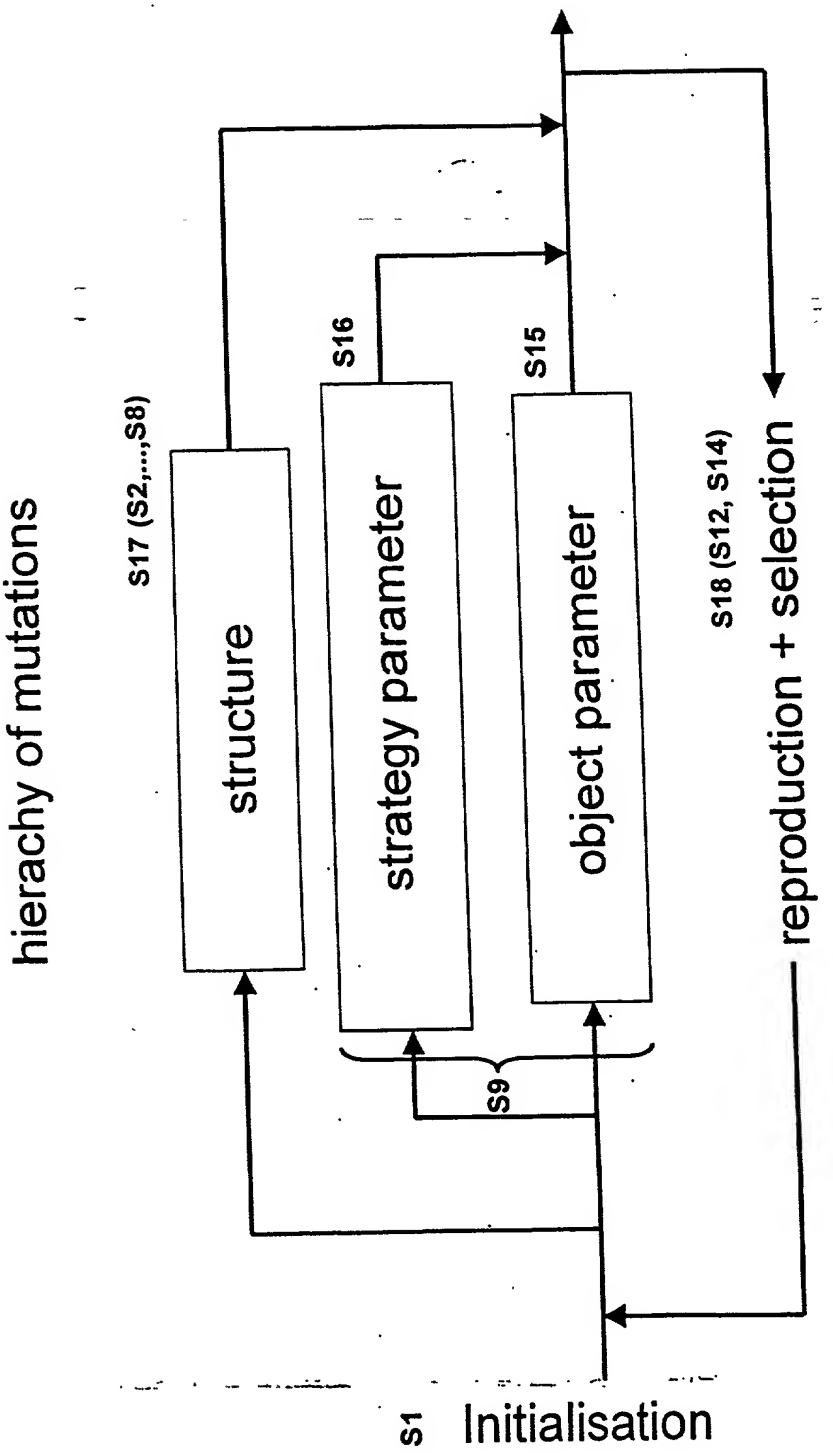


Fig.7

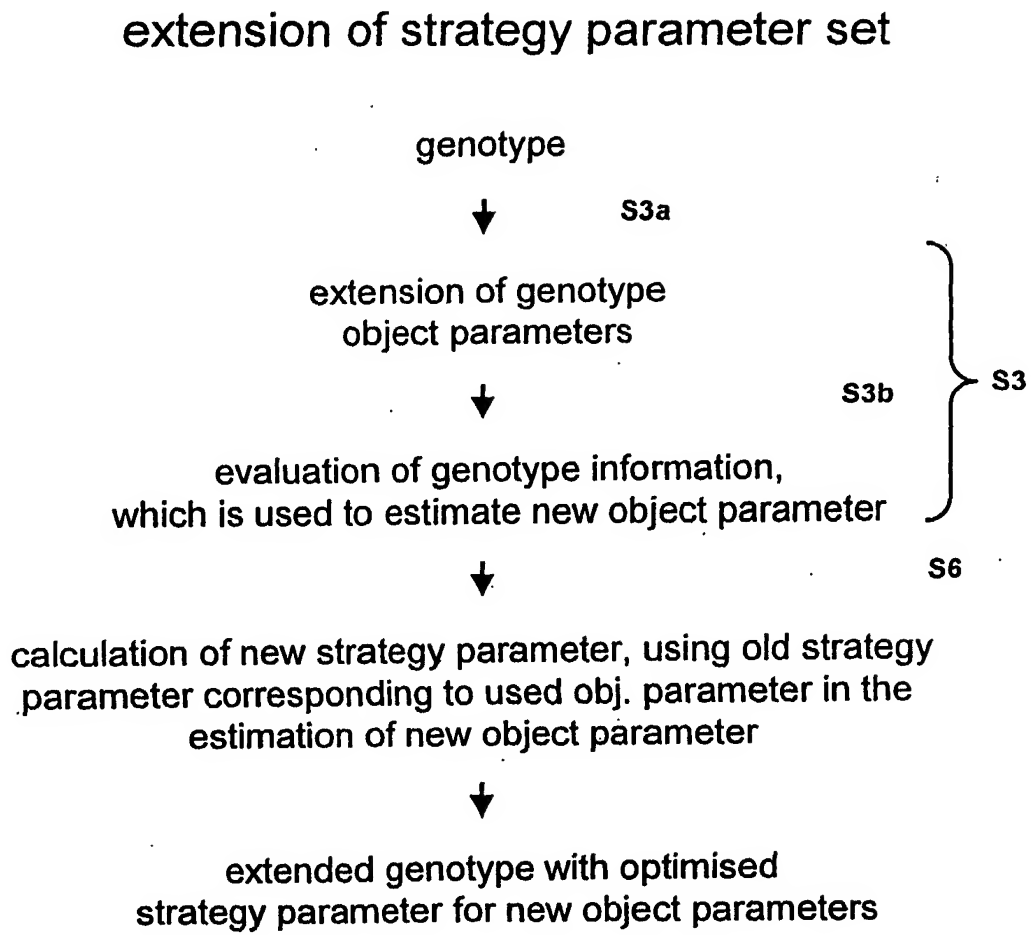


Fig.8

static, large parameter set

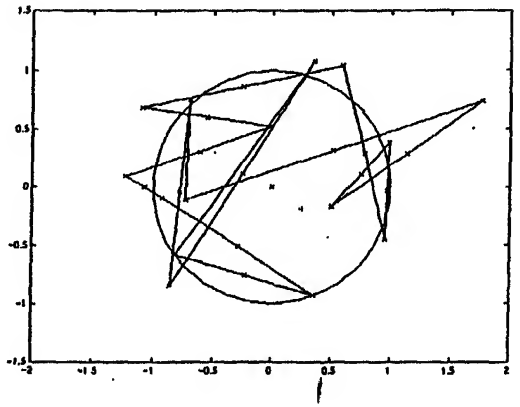


Fig.9

dynamic, incremental parameter set with structure mutations

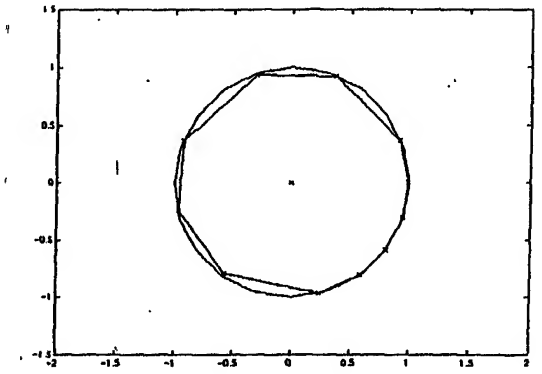


Fig.10

Visualisation of the estimation of strategy parameters

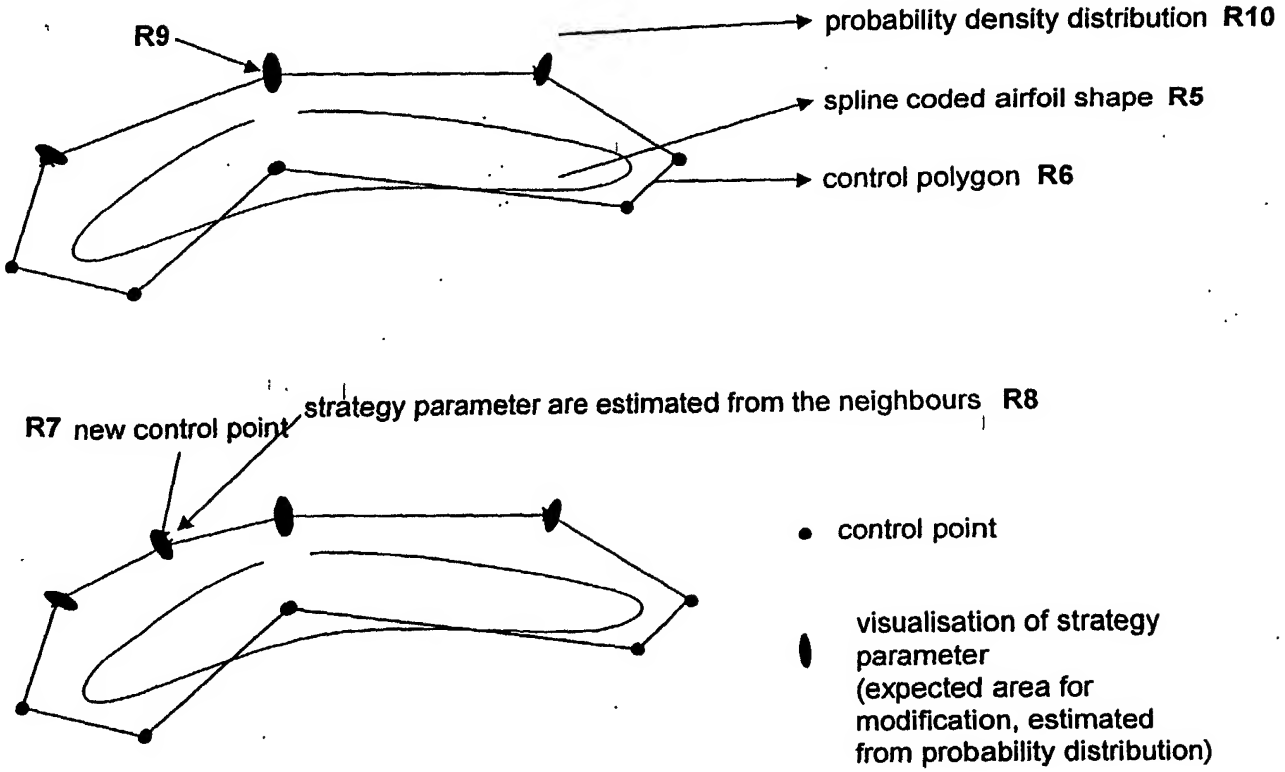


Fig.11

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